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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,048	10/29/2003	Vladimir Grushin	PE0649USDIV6	5833

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E I DU PONT DE NEMOURS AND COMPANY  
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BARLEY MILL PLAZA 25/1128  
4417 LANCASTER PIKE  
WILMINGTON, DE 19805

EXAMINER
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SMOOT, STEPHEN W

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/696,048

Applicant(s)

GRUSHIN ET AL.

Examiner

Stephen W. Smoot

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 August 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

This Office action is in response to applicant's amendment filed on 08 June 2006. It is noted that the status of claim 11 is "canceled" and that all future claim listings should indicate this.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamprecht et al. (US 6,169,184 B1) in view of Forrest et al. (US 6,894,307 B2) and the article by Djurovich et al. in Polymer Preprints (vol. 41, 2000, pp. 770-771 – from applicant's IDS).

Hamprecht et al. disclose the compound as claimed in claim 16, namely, 5-methyl-2-(2,4-difluorophenyl)pyridine (See col. 1, lines 5-27). In formula I of Hamprecht

Art Unit: 2813

et al., R4 can be an alkyl (e.g. methyl), R3 and R5 can be hydrogen, and R1 and R2 can be fluorine.

However, Hamprecht et al. do not teach or suggest that this compound can be used as a precursor for an iridium compound used as an organic layer in an electronic device, which is a limitation of claim 16. More specifically, Hamprecht et al. do not teach or suggest that the organic layer can be a light emitting layer (the limitation of claim 17), nor do they teach or suggest that the organic layer can be a charge transport layer (the limitation of claim 18).

Djurovich et al. teach an organic LED (see Introduction, first paragraph) with iridium complexes that include difluorophenylpyridine ligands. However, regarding claim 16, Djurovich et al. lack the as-claimed methyl group and, further, do not expressly teach or suggest that the fluorine substituents be located in the R1 and R2 positions, as taught by Hamprecht et al. Forrest et al., like Djurovich et al., disclose substituted phenylpyridine ligands for iridium complexes, and further teach that the substituents can include alkyls (e.g. methyl) and, further, that the substituents can be located in any position on either ring of the phenylpyridine ligand (see column 17, line 44 to column 18, line 27). Also, regarding claim 18, Forrest et al. teach that the emissive layer can include a hole transporting matrix (see column 10, line 64 to column 11, line 17).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Hamprecht et al., Forrest et al., and Djurovich et al. in order to use formula I of Hamprecht et al. as a precursor for

Art Unit: 2813

iridium complexes used in organic light emitting layers as taught by Forrest et al. and Djurovich et al. Forrest et al. recognize that the inclusion of an alkyl substituent (e.g. methyl) is within the skill level of the art to obtain desired emissive properties (see column 17, line 44 to column 18, line 27) and Djurovich et al. recognize that solubility in organic solvents is improved with the addition of the fluorine substituents (see paragraph bridging pp. 770-771).

3. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamprecht et al. (US 6,169,184 B1), Forrest et al. (US 6,894,307 B2), and the article by Djurovich et al. in Polymer Preprints (vol. 41, 2000, pp. 770-771 – from applicant's IDS) as applied to claims 16-18 above, and further in view of the communication by Dedeian et al. in Inorganic Chemistry (vol. 30, 1991, pp. 1685-1687 – from applicant's IDS).

As shown above, the combination of Hamprecht et al., Forrest et al., and Djurovich et al. have all of the limitations set forth in claims 16-18 of the applicant's invention. Also, this combination covers the further limitations to claim 12 as set forth in claims 13-15. However, this combination lacks the compound with the structures as set forth in claim 12. Referring to Table I, Dedeian et al. disclose fluoro- and trifluoromethyl-substituted 2-phenylpyridines as light-emitting materials, as shown in the upper, right-hand corner of p. 1686.

Regarding any of the as-claimed structures in claim 12 with two fluorines, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to locate the alkyl (e.g. methyl) and fluorine substituents of Hamprecht et al.

Art Unit: 2813

in any position on either ring of the phenylpyridine ligand, as suggested by Forrest et al., to thereby obtain desired emissive properties. Forrest et al. recognize that such a modification is within the skill level of the art (see column 17, line 44 to column 18, line 27).

Regarding any of the as-claimed structures in claim 12 with either one fluorine or one trifluoromethyl, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the structure of Hamprecht et al. to include just one fluorine or just one trifluoromethyl, as taught by Dedeian et al., in any position on either ring of the phenylpyridine ligand, as suggested by Forrest et al., to thereby obtain desired emissive properties. Dedeian et al. recognize that facial iridium phenylpyridine complexes that are substituted with either one fluorine or one trifluoromethyl can be successfully prepared (see page 1686, paragraph bridging the first and second columns). Forrest et al. recognize that such modifications are within the skill level of the art (see column 17, line 44 to column 18, line 27).

### ***Response to Arguments***

4. Applicant's arguments filed 08 June 2006 (see pages 5-7) have been fully considered but they are not persuasive.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon

hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's arguments that Forrest et al. teach away from Hamprecht et al. and Djurovich et al. and, further, that Djurovich et al. teach away from alkyl substituents on the pyridine ring, Forrest et al. merely teach a preference for alkyl or aryl substituents in the 3, 4, 7, and/or 8 positions for steric reasons (see column 18, lines 25-27), while Djurovich et al. are completely silent regarding alkyl substituents. Neither of these arguments are a proper demonstration of "teaching away" per MPEP section 2145, X, part D.

### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen W. Smoot whose telephone number is 571-272-1698. The examiner can normally be reached on M-F (8:00 am to 4:30 pm).

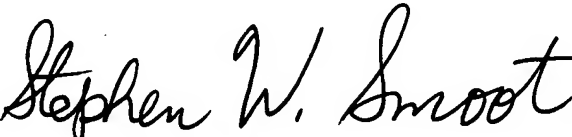
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 2813

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SWS

  
**STEPHEN W. SMOOT**  
**PRIMARY EXAMINER**